



**UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: Kurihara, et al.

Examiner: Laura M. Schillinger

Serial No.: 09/942,445

Art Unit: 2813

Filed: August 30, 2001

Docket: 14872

For: SEMICONDUCTOR DEVICE IN A  
RESIN SEALED PACKAGE WITH A  
RADIATING PLATE AND  
MANUFACTURING METHOD THEREOF

Dated: December 26, 2006

Conf. No.: 7920

Mail Stop Appeal Brief – Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA. 22313-1450

**REPLY BRIEF UNDER 37 C.F.R. § 1.193(B)(1)**

**I. INTRODUCTION**

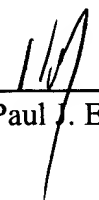
This is in reply to the Examiner's Answer dated October 24, 2006 relative to the above-identified application. This Reply Brief addresses the issues specifically raised in the Examiner's Answer. The Reply Brief is meant to supplement the arguments raised in the Appellants' Brief.

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**CERTIFICATE OF MAILING UNDER 37 C.F.R. §1.8(a)**

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Dated: December 26, 2006

  
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Paul J. Esatto, Jr.

Any argument not raised in the Reply Brief but presented in the Appellants' Brief is not to be considered withdrawn, but is incorporated by reference.

Upon review of the Examiner's Answer, Appellant wishes to address several points advanced by the Examiner, which Appellant believes need clarification. Specifically, the obviousness rejection of Claims 1, 9 and 11, Under 35 U.S.C. § 103(a) over Switky et al. in view of Yamauchi.

## **II. RESIN WALL AND RESIN LID**

Switky, in Figs. 1-3, 5 and 7, discloses a semiconductor chip 16 placed on a bonding pad 17, which is attached to bottom plate 14. A resilient plastic bead 15 is provided on the outer portions of the bottom plate 14 and of top plate 11. However, it is clear that the plastic bead 15 (alleged by the Examiner to be the rectangular-shaped resin wall of the present invention) has an oval-shaped cross-section, not a rectangular-shaped cross-section as shown in Figs. 3 and 8b. The Examiner appears to be confusing the rectangular path of the plastic bead with its oval-shaped cross-section. The rectangular-shaped resin wall of the present invention has both a rectangular cross-section and follows a rectangular path. However the limitation reciting: "...rectangular-shaped resin wall having a first pair of opposing sides and a second pair of opposing sides..." refers to the cross-sectional shape of the resin wall not to its path, or circumferential shape.

Regarding the Examiner's contention that Switky et al. discloses a resilient or elastic plastic bead following a rectangular path around the perimeter of the chip pad 17, based on FIG. 5, Appellant agrees. However, it should be noted, that the plastic bead 15 is not appropriately analogous to the resin wall 40 of the present invention. The plastic bead, being resilient and elastic, as described in Switky et al., lacks the structural rigidity to act as a wall. Switky et al. discloses one appropriate plastic bead 15 material as being RTV silicone rubber; a material

commonly used as a sealant or caulk in large part due to its high flexibility even after curing. In fact, the disclosed plastic bead 15 is used as a sealant, not as a wall.

Appellant respectfully contends that the Examiner has failed to address the actual claimed shape of resin wall 40 as recited in Appellant's Claim 1. The resin wall 40, as recited in Independent Claim 1 and shown in FIG. 3 and FIG. 8b, clearly has a rectangular-shaped cross-section not an oval-shaped cross-section as disclosed and shown in FIG. 3a-c and FIG. 8 and 9 by Switky et al. (See: FIG. 3a-c, element 15; and FIG. 8 and 9, element 27). Moreover, the cited plastic bead 15 does not provide the same function as Appellant's resin wall 40 since the plastic bead is employed as a sealant, not a wall.

Appellant is not attempting to impart limitations present in the specification and drawings to the element recited in Claim 1, but rather to give proper meaning to the claimed property of "rectangular-shaped". It is proper to rely on the specification and drawings to determine the correct meaning of a term used in the claim language as cited in Markman v. Westview Instruments, 52 F.3d 967,980, 34 USPQ2d 1321, 1330 (Fed. Cir. 1996). (See also: MPEP § 2106(c), fifth paragraph).

With regards to the alleged Yamauchi disclosed resin lid, Appellant maintains that the Yamauchi resin lid is distinctly different than the resin lid bonded to an upper end of the resin wall, as recited by Claim 1. Yamauchi discloses a resin housing 16 molded around an inductor 9, thus bonding between lid and wall structures does not occur.

Additionally, as is clearly shown in Yamauchi FIG. 5, the resin housing 16 is formed to physically contact the inductor 9, which fundamentally differs from both the Switky et al. enclosure and Appellant's claimed structure, wherein a void is formed around the top and sides of the semiconductor chip 16. (See: Switky et al., FIG 2 and Appellant's FIG. 8c). This open area

is fundamentally necessary for the proper operation of Appellant's claimed semiconductor device. A housing that is molded around the semiconductor device in a manner causing physical contact between the housing material and bonding wires 7 runs the risk of damaging the bonding wires 7, thus rendering the semiconductor inoperable. Further, the disclosure of the present invention, in the description of the related art, points out that resin sealed packages, which contact or are in very close proximity to the semiconductor chip, are prone to deterioration and/or peeling of the sealing resin, leading to a decrease in reliability of the semiconductor device. (See: Appellants' specification, page 4, lines 1 – 17). The same is true if Yamauchi were combined with Switky et al.

Therefore the combination of the two references is improper, as Switky et al. does not suggest a desirable result from the combination with Yamauchi. Rather, based on Appellants' specification, such a combination would produce undesirable results. Referencing In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990), "the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination". Further, it has been held by the Courts that if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

### **III. FIRST AND SECOND HOLES**

With regards to Claims 7, 9 and 11, a clarification is needed. The Examiner equates Appellants' first holes 31 with holes 23 of Switky et al. However, as recited in Claim 7 and 9, the first holes 31 are located in the outside positions of the resin wall on the conductive member, while the Switky et al. holes 23 are provided on the leads 13 and located so that when the transfer

molding is performed, the plastic encapsulant 12 will pass through the holes 23 so that after curing the leadframes will be securely keyed to the plastic. (See: Swiftky et al., col. 6, lines 18 – 33).

In view of the above description, it is clear that holes 23 are provided, in the region extending through the plastic encapsulant 12, on the lead and not on the outside of the plastic encapsulant 12. Therefore, the Examiner fails to address the recited first holes of Claim 7, 9 and 11.

In response to the Examiner's specific remarks addressing the second holes, the Examiner alleges that the path of the finger 13 through elements 30 and 31 and the O-ring 27, as shown in FIG. 8 of Switky et al., is analogous to the holes recited in Claims 9 and 11.

Appellant respectfully disagrees with the Examiner's interpretation. As recited in Appellants' specification and shown in FIG. 8c of the present invention, the second holes 32 of the lead 30 are provided within the region extending through the resin wall 40 of the lead 30. Clearly, the second holes 32 are positioned on the lead 30 and therefore, are not equivalent structures as the path of Switky et al., as the Examiner contends. (See: Appellants' FIG. 8c; and page 21, line 26 – page 22, line 9). Once again as stated above, the drawings and specification are used merely as aids in interpreting the phraseology recited in Claims 9 and 11.

#### **IV. CONCLUSIONS**

It is clear that all of the limitations of claims 1, 3, 5, 7, 9, 11, 13, 15, 22 and 24 are not taught or suggested by the references of Switky and Yamauchi, individually or in combination. Accordingly, Appellants respectfully submits that the Examiner has not met the burden of establishing a prima facie case of obviousness based on the prior art, as required by 35 U.S.C. § 103(a). In re Piasecki, 745 F.2d 1468, 1471-72, 223 USPQ 785, 787-88 (Fed.Cir. 1984). No

objective teaching in Switky and Yamauchi, individually or in combination, would lead an individual of ordinary skill in the art to produce the present invention.

The above arguments establish that claims 1, 3, 5, 7, 9, 11, 13, 15, 22 and 24 on appeal are patentable over the combination of Switky and Yamauchi. In view of the remarks set forth in this Reply Brief, Appellants respectfully requests that the rejection under 35 U.S.C. § 103(a) citing the aforementioned references made in the Final Rejection dated March 31, 2004, and in the Advisory Action of July 21, 2004, be reversed by the Board of Patent Appeals and Interferences.

Respectfully submitted,



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**TRANSMITTAL LETTER**  
**(General - Patent Pending)**

Docket No.  
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In Re Application Of: **Toshiichi KURIHARA, et al.**

**DEC 29 2006**

Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
<b>09/942,445</b>	<b>Aug. 30, 2001</b>	<b>Laura M. Schillinger</b>	<b>23389</b>	<b>2813</b>	<b>7920</b>

Title: **SEMICONDUCTOR DEVICE AND MANUFACTURING METHOD THEREOF**

**COMMISSIONER FOR PATENTS:**

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**Reply Brief**

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Dated: **December 26, 2006**

Thomas Spinelli, Reg. No. 39,533

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